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The Case of the Norwegian Telecommunication Industry

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ABSTRACT

This article explores how changes in industry in structure reflects

changes in performance and strategy. Industry structure is captured by

applying concentration ratios modified for imports and exports. A set

of interrelated hypotheses is proposed and examined in one industry (the

Norweigian telecommunication industry). Increasing competition was found

positively related to increasing industry concentration, but negatively

 related to new entries and performance as measured by value added.

Large and small firms were found to vary in performance, and they are

seemingly applying different strategies in coping with stagnating

market opportunities.

INTRODUCTION

The purpose of the present article is to explore how changes in industry concentration are reflected in changes in strategy and performance at the industry and firm level.

The S(structure)-C(conduct)-P(performance) paradigm has played an influential role in industrial organization research (cf. Bain 1956; Needham 1979; Scherer 1980 or overviews). "Conduct" in the industrial organization may be considered comparable to "strategy" in the strategic management literature (cf. Caves 1980). The basic idea is that the industrial structure directs the conduct (strategy) of firms in the industry and may influence their performances as well. Most industrial organization studies have been directed towards examining variations in structure, conduct and performance across industries (cf. Scherer 1980). More recently it has been noted that the basic ideas underlying the S-C-P-paradigm can be useful for assessing within industry competition of crucial importance for the firms choice of strategy (cf. Caves 1980; Porter 1979).

INDUSTRY STRUCTURE

The industry structure can be described by a variety of characteristics such as number of buyer and sellers, and their size-distributions, product differentiation, regulations, barriers to entry and exit, and so forth (cf. Scherer 1980; Porter 1980). The S-C-P-paradigm implies that structural changes may lead to subsequent changes in industry behavior and industry performance. Such changes can be initiated by governmental interventions. The anti trust policy in

the U.S., the multitude of regulations observed in most European and other countries, can be seen as devices to influence industry structure, conduct, and performance, and consumer welfare as well (cf. Utton 1970). The industrial structure may, however, change without such interventions. Creation and adoption of technological innovations can influence firms' performance, which may lead to changing industrial structure. Improved firm performance may lead to higher market shares and death of competitors. The entry of new and better performing firms may in a similar way change the industrial structure. Thus industry structure is assumed to influence conduct (strategy) and performance, but changes in conduct (strategy) and performance may change industry structure as well.

Competition and Performance

The presence of more than one firm in an industry, (or the presence of substitute products offered by firms in other industries), implies competition. In order to stay in business, the firm has to cover its costs in the long run. From the individual firm's point of view excess profit is desireable.[1] Inability to cover all costs in the long run will inevitably force the firm to exit the industry. The firm may, however, exit the industry if more profitable opportunities alternatives emerge and exit barriers are absent or low as emphasized

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[1] The focus on profit in the management literature, the emphasis on resource in the resource-dependence perspective (Pfeffer and Salancik 1978) and on survival in the natural-selection model (cf. Aldrich 1979), and on performance in the industrial organization literature (cf. Scherer 1980), support the stated assumption, e.g., the firm has to cover costs--at least in the long run, and that the firm will strive for excess profit.

by Baumol et. al., (1982) in their theory of "contestable markets," or as contended by Porter (1980), when the "mobility barriers" are low or absent. When the mobility of firm's resources is limited, and the competition increasing, the firm's excess profit tends to be reduced.

The core idea reflected in the strategic management literature, is that firms seek sustainable, relative advantages, e.g., advantages bolstering and protecting them against their competitors. In the language of economics, the monopoly, e.g., a situation without competition, is the ideal state from the firm's point of view. Conversely, in the situation of pure competition the firm has no relative advantages and no protection against competitors exists, and there is no way of making excess profit.

Comparisons of Structural Changes

Any description of the industrial structure maps specific characteristics of the population of firms (within the industry) at specific points in time. Comparisons of such structural descriptions in one industry over time, can be classified as comparative, static analysis. Here it is believed that comparisons of structural changes within an industry may be useful for detecting specific characteristics of firms' strategy as well as allowing for examining potential variations in structural and performance changes. Changes in concentration ratios may for example reflect expansion/contradictions in order to respond to changing opportunities and threats. Changes in distribution of profits and market shares can be seen as changes in performance across

firms. It should be noted, however, that the usefulness of such comparisons, will rest on the descriptive characteristics applied.

Concentration Ratios

Concentration ratios are widely used for characterizing industrial structures (cf. Utton 1970). The popularity of such measures is easy to grasp. They are easy to calculate; they are quantitative; and they convey the impression "objectivity." It is however, easy to point at several inherent weaknesses (cf. Pickering 1974, p. 9-16); for example, the firm may operate at the domestic market as well as in foreign markets and concentration in ratios may not consider these differences. By studying concentration among the domestic industries only, as most studies applying concentration ratios do, it is overlooked that firms may operate in several markets. Thus the importance of imports is neglected. It may also be argued that concentration ratios do not map close substitutes to the products offered by the industry. This argument may also be reversed, e.g., in industries offering differentiated products, not all products offered need to be perceived as substitutes by the market. Concentration ratios are also based on the assumption that firms operate independently which will not necessarily be the case. This overlooks the importance of interlocking directorates, vertical integration and contervailing power are all recognized phenomena and aspects of the industrial structure of crucial importance for firms' strategy and performance.

Much of the past research has failed to recognize that such measures (e.g., concentration ratios) and <u>indicators</u> of some underlying concept (e.g., market structure), and that the indicators applied may be more or less adequate in measuring what they intend to do (Kerlinger 1973).[2] To overcome the noted weaknesses, the following is proposed in order to make concentration ratios more adequate: Distinguish between markets served by the domestic firms, e.g. the domestic and foreign markets; take imports into account, and; differentiate markets more narrowly as described by the SIC-classification, and thus make the products included more homogenous, and exclude less relevant substitutes.[3] Additional information should also be included (such as information about integration and products) to more adequately map the industry structure.

Markets

A few words should also be said about markets. According to Dorfman (1967) a market can be characterized as:

> "a constantly shifting group rather than a place or
>
> identifiable social institution" (p.21).

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[2] Measurement problems have received surprisingly modest attention in the industrial organization and strategic management research (cf. Venkatraman & Grant (1986) compared to what has been the case in other disciplines. For a recent discussion of the use and interpretation of concentration ratios, see Carter (1984).

[3] In differentiated markets, differences between products will, however, still exist. The degree of substitutability may vary across the products offered. Moreover, the potential buyers will seldom or never be aware of all the products offered within the industry, which may reduce the actual substitutability and thus the real competition between the firms within the industry (cf. Scitowsky 1950).

The mere notion of concentration ratio, however, implies restriction to specific geographical area(s), such as the domestic market. Many industrial studies have focussed on national defined markets, in most cases from a seller (e.g., producer) perspective, without taking neither exports nor imports into account.[4]

TENTATIVE HYPOTHESES

The individual firm may operate in one or more markets. When limiting the market to include a specific geographical area and specific products as defined by the SIC-classification this may be viewed as a specific "niche." The total sales of the firms operating in this market can be seen as the realized niche, which defines constraints and opportunities for the firms operating here (cf. Zammuto and Cameron 1985). Comparisons of total sales over time may serve as an indicator to what extent the niche is being exploited. Rapidly increasing sales may indicate that the niche is increasing and/or that it has previously been exploited to a modest degree only.

It is believed that when the entry barriers are modest, and the niche is growing and/or modestly exploited, the number of entries will be higher compared to what will be the case in highly exploited and/or stagnating niches (markets). Number of exits is also assumed to be lower when the niche is modestly exploited and/or increasing compared to situations when the niche is highly exploited and/or the size of the niche is stagnating. Number of entries and exits can be viewed as indicators of industry competition, leading to the following hypothesis:

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[4]Caves (1984) has recently pointed at the neglected link between industrial organization and international trade.

H1: Number of entries will be positively and numbers of exits
of firms will be negatively related to niche opportunities,
when entry and exit barriers are modest.

It is believed that when operating in stagnating markets (niches),
the industry concentration will increase. The reason for this belief is
rooted in such observations that larger more than small firms can
benefit from economies of scale, usually they (the larger firms) have
been on the market for a longer time and are thus benefiting more from
previous learning (cf. the experience-curve), they are higher in market
power than are the smaller firms, and thus the larger firms are enjoying
more cost advantages than do their smaller counterparts. Thus:

H2a: When confronted with stagnating niche opportunities,
the industry concentration ratio is expected to increase.

H2b: Larger better than small firms will adapt to stagnating
niches.

A similar development may, however, be observed when the niche is
increasing, due to the higher resources possessed by larger firms and
thus their higher ability to increase production. The observation
made by Gibrat (1931), that in industries consisting of firms differ-
ing in size, but enjoying the same growth rate, the industry concen-
tration will increase, is also supporting the stated assumption.

When niche opportunities are stagnating or decreasing, the
competition turns stiffer as firms not easily move from one niche
(market or industry) to another, which tends to reduce excess profit,

H3a: Higher industry concentration due to increased
competition will be negatively related to industry performance
as measured by excess profit.

And similarly, if outside competitors enter the niche, the firms located on the niche will experience stiffer competition, leading to increased concentration among these firms and decrease in their over-all performance.

> H3b: Increasing competition from outside competitors, will be positively related to industry concentration among firms located within the niche and negatively related to their all-over performance.

The firm will strive for profit and survival. When competition becomes stiffer, e.g., when the niche opportunities become harder to obtain, the firm located on the niche will try to move to other niches, such as entering new geographical markets with the same products, and/or moving into new industries.

> H4: Stiffer competition as reflected in higher industry concentration and lower over-all industry performance will be positively related to efforts to find new geographical niches for the same product(s).

DATA AND MEASUREMENTS

The present study is restricted to the telecommunication industry defined at the four-digit level by the SIC-classification (#3832) in one-country (Norway). In the market study, telecommunication is assumed to be a potential growth industry - as it is in other countries (cf. NOU 1976, EBF 1985). Many, mostly small domestic firms operate in this industry, and vertical integration is almost absent, (as is horizontal

integration). Most of the small firms operate in this industry only, while a few of the larger firms operate in several industries as defined by SIC-categories. Approximately two-thirds of the firms have exports.

Measurements

(1) <u>Niche (market) size</u> was estimated as: production - exports + imports. By comparing such estimates at different points in time, estimates of niche <u>development</u> were obtained. Information on production and exports was obtained from <u>Industrial Statistics</u> publications. Imports were estimated by adding up the value of all products identified as belonging to this industry by using information from <u>External Trade</u> publications.

(2) <u>Concentration ratio</u> was measured as: (number of persons employed by the four largest domestic firms)/(total number of domestic employees). The industry under scrunity is labor-intensive, and changes in employment will be related to changes in sales and performance. Thus it is believed that this measure is adequate for the present research purpose. This measure was obtained from a specific data-file covering the years 1976-81, where the annual records for the individual firms have been linked, allowing to following the individual firm over time (Haugland 1982). It should be noted that the unit of observation and analysis is the <u>establishment</u>, e.g., the functional unit as defined by ISIC (International Standard Industrial Classification of all Economic Industry).

(3) Industry performance was measured as: a) domestic market share, e.g., (production-exports)/(production - exports + imports); and b) value added (defined as the value of production in market prices less costs of goods and services consumed, Industrial Statistics 1981, p. 31). The value-added measures were deflected in order to make comparison possible.

(4) Entries were measured as firms being in the population of firms at time t + 1 , but not at t, and exits were measured as firms in the population at time t, but not t + 1. These estimates were based on the database of linked individual firms described above.

FINDINGS

Below are reported on the major findings:

(1) Table 1 reports total sales in the industry at the domestic market.

[Table 1 about here]

Inspections of Table 1 reveals that imports have increased as measured in percent and current values. It is also observed that total sales as well as sales from domestic production have increased during the period covered.

In Table 1 sales are reported in current values. The average annual inflation rate during the period study was approximately 10%. By deflating the sales values, and calculating the annual average growth rates, the following is found:

    Sales from domestic producers   + 1.6% per year

    Total Sales   + 4.4% per year

The growth rate in total sales indicates that the market is growing, but not very fast, while the domestic producers are experiencing the market as stagnating.

(2) Birth of new firms is assumed being of importance in most economies. Birch (1977) estimated the annual birth rate of business firms to be 7% in the USA during the period 1972-76. For the Norwegian manufacturing industries, the annual birth rate of new establishments has recently been estimated to 4% (Reve et. al., 1984).

[Table 2 about here]

The total number of firms was 85 in 1976 and 86 in 1981. Inspection of Table 2 reveals that number of entries has been very low, e.g., less than 1% per year during the period covered. The by far lower average growth rate in this industry compared with all manufacturing industries in this country, may be interpreted as the opportunities are being perceived lower in this industry compared with the opportunities in the manufacturing industires as such. The numbers presented in Table 2 are very modest. By comparing the fraction entries/exits, for the two periods 77-78 and 79-81, <u>decreasing</u> numerical values $(\frac{4}{1} > \frac{2}{4})$ are observed, indicating stiffer competition throughout the period studied. Together with the findings presented above (cf. Table 1), this variation can be interpreted as being in concordance with the stated hypothesis H1.

Stagnating markets and stiffer competition were expected to covary with increasing within industry concentration (H2a). In the present case, it was found impossible to trace all the firms actually selling their products in the market area examined. By looking at the changes

in the concentration ratios among the domestic firms, the following was observed:

[Table 3 about here]

As seen from Table 3, the concentration ratios as measured by the fraction of employees in the four largest firms remain almost the same during the period 1978-1980, but the concentration ratio increases dramatically from 1980 to 1981. The findings is partly in support of the stated hypotheses (H2a and H3b). Hypotheses H2a-b build on the assumption that larger firms due to advantages in economies of scale, more previous learning and greater market power will perform better than smaller firms when confronted with stagnating opportunities. Inspection of the largest firms demonstrated that three of the four largest kept their positions as measured by rank (e.g., #1, 2, and 3) throughout the whole period. The two largest also increased in size as measured by number of employees. The mean firm size in 1976 was 132 employees compared to 118 employees in 1984, e.g., a _reduction_ in the average firm size. The reported findings indicate that changes in concentration ratios covary with changes in strategy (conduct) and performance. When comparing the changes in concentration ratios (Table 3), it is observed that the real change took place towards the end of the period studied. This may be interpreted as this change has been influenced by the decreasing performance particular among the smaller firm. Thus, as noted at the outset of the paper, changes in performance and conduct may influence changes in this concentration. This does not, however, exclude that industry structure can influence

strategy (conduct) and performance. The actual industry structure may

definitely influence the firms (and thus the industry) strategy and

performance. The industry or parts of the industry (cf. Gripsrud and

Gronhaug 1985; Porac et al. 1985) will be perceived as competitors by

the individual firm, which will influence its choice of competitive

actions and performance as well (cf. Hall and Sais 1980).

When inspecting changes in mean size for firms in various size-

groups, the following emerges:

[Table 4 about here]

The findings reported in Table 4 are interesting, indicating that

firms in the various size groups are handling increasing competition

differently. Larger firms seemingly are more able to cope with

stagnating environments (cf. H2b) than are their smaller counterparts,

which may be due to cost advantages (as discussed in more detail

later).

It was also ascertained that increased concentration due to

increased competition would be negatively related to industry all-over

performance (H3a-b). The data only allow us to assess the performance

of the domestic producers within the industry.

Table 1 reported on industry sales. The value added as measured

in current prices rose from mill. NOK. 999 in 1976 to mill. NOK. 1359

in 1981, e.g., 36% increase. When deflating the value added (as was

done for sales), it is found, however, that the value added as measured

in fixed prices amounted to mill. NOK. 844 in 1981, e.g., 15.5%

reduction during the period studied, indicating decreasing industry

performance, strongly supporting the stated hypotheses (H3a-b). The

observation that wages and salaries amounted to 91.1% of the value added in 1981 compare to 85.9% in 1976 also supports these hypotheses.

Lastly, it was hypothesized that firms facing stagnating opportunities within the present niche, would try to move into new niches for the same products offered (H4).

[Table 5 about here]

Inspection of Table 5 reveals that exports have increased relatively more than the domestic sales which is in concordance with the stated hypothesis (H4). Interviews with major firms in the industry, as well as inspection of reported SIC-codes for these firms, indicate that going to outside markets with the same products is their prime strategy to handle increased competition. By comparing increase in imports (cf. Table 1) with increase in exports (cf. Table 4) it is observed, however, that the increase in exports do not compensate for the increase in imports, indicating a "market loss" amounting to:

mill. NOK. [(1726-639) - (655-265)] = mill. NOK. 697,

This implies that the domestic industry is losing to foreign competitors. In assuming approximately same growth rates in the domestic and foreign markets, the findings also indicate that the relative position has been weakened at the domestic as well as in foreign markets.

DISCUSSION

The reported findings deserve some further comments:

-     The present study was guided by a set of interrelated indicative hypotheses. The findings demonstrate that the theory guiding the indicative hypotheses possesses descriptive and predictive power.

- It was assumed – and observed – that larger firms were all performing better than did their smaller counterparts. An important questions is: "Why?" The present data unfortunately do not allow for any detailed examination of this question. However, by examining the SIC-codes of the various firms, it was found that larger firms all belonged to several SIC-categories, e.g., they all represented diversified firms, while the smaller firms belonged to one industry (e.g., SIC #3832) only. Thus, one factor which might explain the better performance of the larger firms in this industry is economies of scope, e.g., the firms can share resources across product lines in different industries (cf. Teece 1982), and thus get cost advantages.

- The findings reported in Table 4 may be interpreted as large and small firms represent different types of strategy. The larger firms operate as generalists, e.g., they offer a variety of product to several markets, while the smaller firms operate as specialists. (For detailed description of such strategic types, see Zammuto and Cameron 1985.) The generalists are operating in several niches which seemingly are making them less vulnerable to stagnation in one of the niches where they are operating. The smaller firms, however, have limited their allocations of resources and activities to one industry only. To cope with the increased competition, they trim their organizations, and stick to their basic skills and advantages, (and thus the reduced observed mean sizes).

- It was also noted that expansions into new markets appeared to be a (if not the) major strategy when encountering increasing competition and lower opportunities for profit and growth. This

indicates that <u>mobility barriers</u> really exist. It takes time, efforts and resources to move into new industries. Moreover, this finding may also indicate that the often assumed higher mobility among small compared to large firms primarily is a myth. The distrust in small-business ability to change is also reflected in a recent Business Week cover story dealing with the US high-tech crisis: "But smaller companies don't have that mobility-and they are already in deep trouble" (Business Week 1985, p. 47).

Here it was observed that imports have increased rapidly. Why? A closer examination of the products offered reveals that these to a substantial degree are offered by large foreign firms. Easy access to distribution channels in markets is one important factor. Economies of scale in production leading to differential costs allowing for highly competitive prices may be another part of the explanation, as is improved products due to superiority in R&D due to higher re-sources.

- The present industry has been regarded a potential growth industry in the country studied (NOU 1976; EBF 1985). Our findings indicate that the hoped growth probably is far away. The low and declining birth rate, the decreasing value added as measured in fixed prices, the decreasing market shares by domestic firms, the increasing "market loss" are all incidents contradicting the growth statement. Our findings indicate that rather modest market growth and stiff foreign competition-as experienced in the US (Business Week 1985) and the UK (ERT 1984) as well as other countries-can halt and even destroy the best wishes.

REFERENCES

Aldrich, H. (1979), <u>Organizations and Environments</u>, New Jersey, Englewood Cliffs/Prentice-Hall.

Bain, J. S. (1956), <u>Barriers to New Competition</u>, Cambridge, Harvard University Press.

Baumol, W. J. Panzar, J. C. and Willig, R. D. (1982), <u>Contestable Markets and the Theory of Industry Structure</u>, New York, Harcourt Brace Jovanovich.

Birch, D. (1979), <u>The Job Generation Process</u>, Cambridge, MA, MIT Program of Neighborhood and Regional Change.

Business Week (1985), "America's High-Tech Crisis," <u>Business Week</u>, March 11, 44-50.

Carter, J. R. (1984), "Concentration Change and the Structure-Performance Debate: An Interpretive Essay," <u>Managerial and Economic Decision</u>, Vol. 5, No. 4, 204-212.

Caves, R. E. (1980), "Industrial Organization, Corporate Strategy and Structure," <u>Journal of Economic Literature</u>, Vol. XVIII (March), 64-92.

Caves, R. E. (1983), "International Trade and Industrial Organization: Problems, Solved and Unsolved," <u>paper</u> presented at the Annual E.A.R.I.E. Conference, Bergen.

Central Bureau of Statistics, <u>Industrial Statistics, 1976, 1981</u>, Oslo, Central Bureau of Statistics of Norway.

Central Bureau of Statistics, <u>External Trade, 1976, 1981</u>, Oslo, Central Bureau of Statistics of Norway.

Dorfman, R. (1967), <u>Prices and Markets</u>, New Jersey, Prentice-Hall.

EBF (1985), Norsk elektronikkindustri: Status og perspektiv, Oslo, Elektronkkindustris bransjeforening.

ERT (1984), "How the British TV Industry Lost Its Way," <u>Electrical and Radio Trading</u>, Jan. 19, 17-19.

Gibrat, L. (1931), <u>Les Inegalités Economiques</u>, Paris.

Gripsrud, G. and Grønhaug, K. (1980), "Structure and Strategy in Grocery Retailing: A Sociometric Approach," <u>Journal of Industrial Economics</u>, Vol. XXXIII, March, 339-345.

Hall, D. J. and Saisas, M. A. (1980), "Strategy Follows Structure," Strategic Management Journal, Vol. 1, 149-163.

Haugland, T. (1982), "Etablering og nedlegging av industribedrifter," Raport, No. 82/32, Oslo, Central Bureau of Statistics of Norway.

Kerlinger, F. N. (1973), Foundations of Behavioral Research, New York Holt, Rinehart, Winston, NC, (Second Edition).

Needham, D. (1979), The Economics of Industrial Structure, Conduct and Performance, London, Holt, Rinehart and Winston.

NOU (1976), Elektronikkindustri, Oslo, NOU 1976:30.

Pfeffer, J. and Salencik, G. R. (1978), The External Control of Organizations, New York, Harper and Row.

Pickering, J. F. (1974), Industrial Structure and Market Conduct, London.

Porac, J. F., Thomas, H. and Emme, B. (1985), "Cognitive Taxonomies in a Retailer's Understanding of Competitive Environment," Faculty Working Paper No. 1215, College of Commerce and Business Administration, University of Illinois at Urbana-Champaign.

Porter, M. E. (1980), Competitive Strategy, New York, Free Press.

Porter, M. E. (1981), "The Contribution of Industrial Organization to Strategic Management," Academy of Management Review, Vol. 6, No. 4, 609-20.

Reve, T., Holm, T. and Haugland, T. (1984), "Birth and Death Processes of Industrial Organizations," Working paper, Bergen, Institute of Industrial Economics.

Scherer, F. M. (1980), Industrial Market Structure and Performance, Chicago, Rand McNally and Co.

Scitowsky, T. (1950), "Ignorance as a Source of Oligopoly Power," American Economic Review, Paper and Proceedings, Vol.   , 48-53.

Teece, D. J. (1982), "Economies of Scope and the Scope of the Enterprise," Journal of Economic Behavior and Organization, Vol. 1 (September), 223-245.

Utton, M. A. (1970), Industrial Concentration, Hammondsworth, Penguin Books.

Venkatraman, N. and Grant, J. H. (1986), "Construct Measurement in Organizational Strategy Research: A Critique and Proposal," Academy of Management Review, Vol. 11, No. 1, 71-87.

Zammuto, R. F. and Cameron, K. S. (1985), "Environmental Decline and Organization Response," in L. Cummings and B. Staw (eds.), <u>Research in Organization Behavior</u>, Vol. 7, Greenwich, CT, JAI Press Inc., 223-262.

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	1976		1981	
Sales from Domestic Producers	71.8%	1616	62.0%	2811
Imports	28.2%	639	38.0%	1726
TOTAL	100.0%	2255	100.0%	4537

Table 1. Sales from Domestic Producers and Imports
(% and Mill. NOK.)

	75-78	79-81	Total
Entries	4	2	6
Exits	1	4	5

Table 2. Entries and Exits of Firms

	1976	1977	1978	1979	1980	1981
Four Largest Firms	48.5%	48.8%	49.7%	48.6%	49.4%	60.7%

Table 3. Percentage of Employees in the Four Largest
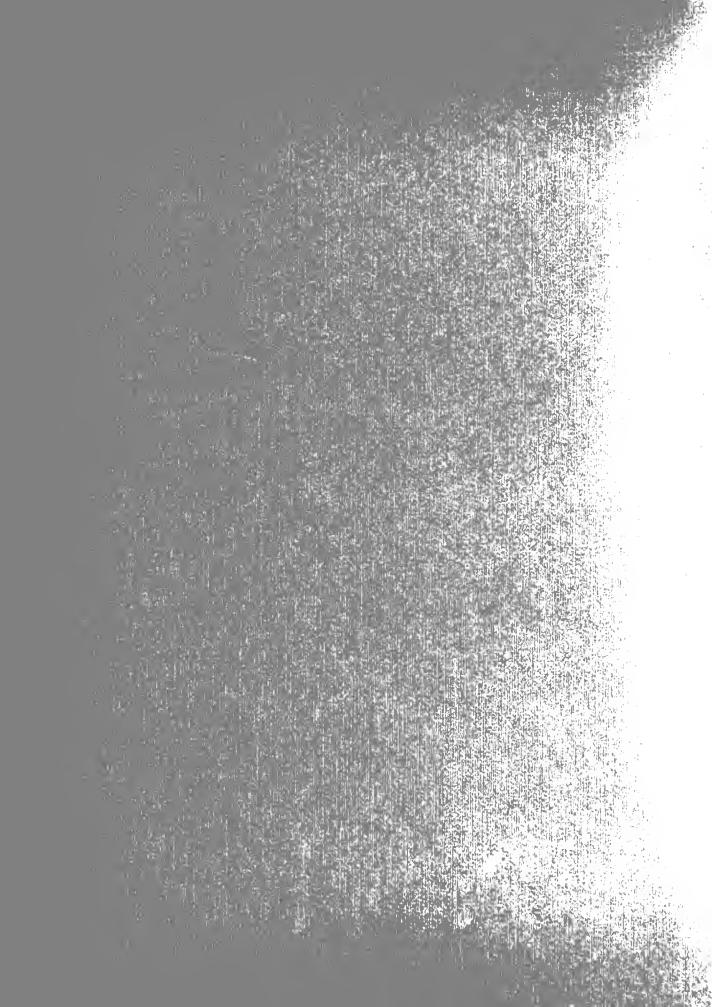Firms 1976-1981.

Size Group:	1976	1981
(1) Number 1-4	1.046.3 employees	1.419.0 employees
(2) Number 5-8	370.5 employees	334.0 employees
(3) Number 9-n	39.4 employees	30.1 employees

Table 4. Mean Size (number of employees).

	1976		1981	
Domestic Sales	85.9%	1616	81.1%	2811
Exports	14.1%	265	18.9%	655
Total	100.0%	1881	100.0%	3466

Table 5. Domestic and Foreign Sales (% and Mill. NOK.).